

## Synthesis, structure, and hydrophosphorylation of $\pi$ -complexes derived from tert-butyl(1,3-dimethyl-2-butenylidene)amine and homoligand iron(0) and group VIb metal carbonyls

Kuramshin A., Kuramshina E., Cherkasov R.

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

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### Abstract

New iron(0), chromium(0), molybdenum(0), and tungsten(0)  $\pi$ -complexes containing  $\eta^2$ -,  $\eta^3$ -, and  $\eta^4$ -coordinated tert-butyl(1,3-dimethyl-2-butenylidene)amine ligands were synthesized under conditions of photochemical and thermal activation. The geometric, electronic, and energetic parameters of the coordinated 1,3-azadiene were calculated by nonempirical methods, and factors determining the mode of coordination were established. The obtained  $\pi$ -complexes reacted with dialkyl phosphonates in the presence of triethylamine to afford organometallic  $\alpha$ -aminophosphonates; hydrophosphorylation in the absence of a catalyst gave the corresponding amidophosphate which then underwent rearrangement into  $\alpha$ -aminophosphonate. © 2004 MAIK "Nauka/Interperiodica".

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